Some results with nitrogen fertiliser on cereals at Esperance Plain Research Station

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On newly-cleared land at Esperance Plain Research Station the use of sulphate of ammonia on cereals has proved profitable over a number of seasons. The response to sulphate of ammonia varies markedly with the season.

The yield of cereals on newly-cleared land on the Esperance Plain Research Station has varied markedly depending on the season. In the first few years of development at the Station very low crop yields were obtained (Shier and Dunne unpublished data) and it could only be concluded that cropping new land in this area was not economical. Results of later variety trials (Shier and Reeves 1954, 1957, Wild and Reeves 1956, 1957, and Reeves 1954) and results of fertiliser experiments (Dunne and Shier unpublished data) indicate that on the average, profitable cereal crops can be grown on many soils of the Esperance Plain. (However, no results are available for the deep sandy soils of the area.)

For example, over a seven-year period on newly-cleared land, an average wheat yield of about 11 bushels per acre has been obtained. Over five years there was an average of 13 bushels per acre of barley and over four years an average of 17 bushels per acre of oats.

1959 RESULTS WITH SULPHATE OF AMMONIA

In 1959, two experiments with sulphate of ammonia on cereals were planted. One of these tested the effect of sulphate of ammonia on barley planted on newly-cleared well-fallowed land.

The results of this experiment are listed in Table 1.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Sulphate of Ammonia (lb./acre)</th>
<th>Yield (bushels/acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>17</td>
<td>19</td>
</tr>
<tr>
<td>2</td>
<td>28—Drilled with Seed</td>
<td>25</td>
</tr>
<tr>
<td>3</td>
<td>56—Do. do.</td>
<td>32</td>
</tr>
<tr>
<td>4</td>
<td>112—Drilled with seed, broadcast prior to seeding</td>
<td>30</td>
</tr>
<tr>
<td>5</td>
<td>224—Do. do. do. do.</td>
<td>44</td>
</tr>
<tr>
<td>6</td>
<td>448—Do. do. do. do.</td>
<td>47</td>
</tr>
<tr>
<td>7</td>
<td>448—Broadcast prior to seeding</td>
<td>51</td>
</tr>
<tr>
<td>8</td>
<td>224—Broadcast in August, Drilled with seed, broadcast prior to seeding</td>
<td>53</td>
</tr>
</tbody>
</table>

Super 150 + copper ore 30 + zinc oxide 3 (lb. per acre) were applied to all plots.

This fertilizer was mixed with the sulphate of ammonia for all treatments except Treatment 7.

Large increases in yields were obtained even with very low rates of sulphate of ammonia. Two cwt. of sulphate of ammonia applied at seeding was insufficient for maximum yields. (cf. yields from Treatments 5 and 8.)

The second experiment planted in 1959 was on land that had been under subterranean clover (Bacchus Marsh) for six years. As this experiment was designed for other purposes, only one rate of sulphate of ammonia was used.

The response to this dressing of sulphate of ammonia was surprisingly great considering the good yield obtained without nitrogen fertiliser (Table 2.)
EFFECT OF SULPHATE OF AMMONIA ON GRAIN YIELD OF WHEAT SOWN AFTER SIX YEARS OF CLOVER LEY—ESPERANCE PLAIN RESEARCH STATION, 1959

<table>
<thead>
<tr>
<th>Yield (bushels/acre)</th>
<th>Without sulphate of ammonia</th>
<th>With 112 lb. per acre of sulphate of ammonia</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>46</td>
<td>56</td>
</tr>
</tbody>
</table>

Although the ley period has lifted the yield of wheat far above that expected from "new" land, it is evident that in suitable seasons lack of nitrogen still limits crop growth even on old clover land.

CONCLUSIONS FROM EXPERIMENTS

From these two experiments it should not be concluded that large and economical responses would always be obtained from using sulphate of ammonia on cereals in the Esperance district.

The response to sulphate of ammonia varies greatly with the season. Response tends to be greater in years when good yields are obtained from crops without the use of nitrogen fertiliser. (Dunne and Shier unpublished data). Use of nitrogen fertiliser cannot therefore be regarded as a complete insurance against a poor crop. However results indicate that the use of sulphate of ammonia at a rate of between 56 and 112 lb. per acre over a number of years would be profitable on cereals grown on newly-cleared land.

Application of the sulphate of ammonia at seeding and mixed with superphosphate has been found satisfactory in this area when applying between 56 and 112 lb. per acre of sulphate of ammonia.

ACKNOWLEDGMENT

All of the experiments mentioned in this article were planted and harvested by Mr. E. B. Norris and other staff of the Esperance Plain Research Station.

REFERENCES


LICE ON SHEEP

There had been a slight increase in the number of lice-infested sheep detected at the metropolitan sales, said the Minister for Agriculture (Mr. C. D. Nalder), recently.

There were 1,376 lice-infested sheep among a total of 244,778 inspected at Midland Junction sales, but 130,300 sheep inspected at country sales appeared to be free of vermin.

While this incidence is still reasonably low it emphasises the need for more careful attention to dipping after shearing.

Little evidence of vermin infestation in agricultural clips was revealed by inspection of wool on the show floors, but a considerable number of pastoral clips were affected by lice.

Because of the effects of drought and the difficulties encountered in obtaining clean musters, dipping cannot be enforced in the pastoral areas and is not compulsory as it is in agricultural districts.

In their own interests however, pastoralists would be well advised to dip their flocks off shears as an annual routine where seasonal conditions permit.